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EXAMINER

LEUNG, JENNIFER A

ART UNIT PAPER NUMBER

1764

DATE MAILED: 04/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/522,118

Applicant(s)

HAM ET AL.

Examiner

Jennifer A. Leung

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 April 2006.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-18 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn. Claim 19 is cancelled. Claims 1-18 are under examination.

Claim Rejections - 35 USC § 102 and 35 USC § 103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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2. Claims 1-4, 7-10, 14 and 18 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Schulz et al. (US 6,224,838).

Regarding claim 1, Schulz (FIG. 1-6; column 5, line 10 to column 6, line 65) discloses an apparatus comprising:

a ring of separate, hollow conduit members (i.e., scallops **10** in FIG. 1; labeled as scallops **58** in FIG. 5, 6) positioned against an inner wall of a vessel **60** (FIG. 5, 6); said members **1/58** having an internal cross-sectional area defined by a pair of generally radially extending side wall portions (i.e., a pair of connection flaps **16**; FIGs. 1-3) and an inner wall portion (i.e., the axially extended front side **12**) integrally joined to each side wall portion **16**; the outer ends (i.e., small radius knuckle sections or edges **17**) of the side wall portions **16** being in contact with the inner wall of vessel **60** (see FIG. 5,6); and the inner wall portions **12** having at least a portion of their surface formed by screen members (i.e., defined by profile wires **13** and support bars **15**) having flow openings (i.e., perforations **20**) of a dimension less than the diameter of a particulate material forming a bed in an annular space of the vessel (i.e., a catalyst in retaining space **52** having a generally annular cross section; FIG. 5; column 8, line 60 to column 9, line 25), located between said members **1/58** and an axially mounted member **70** (see column 6, lines 11-23).

As shown in FIG. 2, the side wall portions **16** are angled away from each other in a generally, radially, outward direction. The figures further illustrate the sidewall portions **16** being angled away at what appears to be an included angle that is less than “truly radial” relative to the axis of the vessel **60** (i.e., the angle being determined by a radius of curvature **R₃**; see also FIG. 6). Because the included angle is less than “truly radial”, the included angle is, inherently, sufficiently small to permit said conduit members **1/58** to be moved inwardly relative to adjacent

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members 1/58. Accordingly, the apparatus of Schulz structurally meets the claim.

Schulz, however, does not explicitly state the value of the included angle. In any event, it would have been obvious for one of ordinary skill in the art at the time the invention was made to select an appropriate value for the included angle (such as the claimed value of an included angle being less than “truly radial”) in the apparatus of Schulz, on the basis of suitability for the intended use thereof, because it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art, *In re Aller*, 105 USPQ 233.

Regarding claims 2 and 3, the end portions 17 of the side-wall portions 16 are joined by an outer wall portion 14, wherein the side-wall portions 16 and the outer wall portion 14 are formed from a single sheet of metal (see FIGs. 1-3).

Regarding claim 4, the screen members comprise parallel wires (i.e., profile wires 13) spaced to form slots (i.e., defining the perforations 20), the wires 13 being arranged in a vertical direction (see FIG. 1-3).

Regarding claim 7, the outer ends 17 of sidewall portions 16 (FIGs. 1-3) that contact the inner wall of the vessel 60 are not joined to one another (see FIG. 6, wherein each scallop 58 is spaced apart from an adjacent scallop 58).

Regarding claim 8, inherently, the conduit members 1/58 must have a cross-sectional area and shape that is smaller than at least one opening on the vessel 60, to enable the disclosed installation of the individual conduit members 1/58 against the inner wall of the vessel 60.

Although Schulz is silent as to the relative sizing of the top opening of the vessel (i.e., for stream 26; see FIG. 4) relative to the cross-sectional area and shape of the conduit members 1/58, it

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would have been obvious for one of ordinary skill in the art at the time the invention was made to select an appropriate sizing for the top opening relative to the conduit members 1/58 (such as a top opening that was larger than the cross-sectional area/shape of the conduit members 1/58) in the apparatus of Schulz, on the basis of suitability for the intended use thereof, because it has been held that changes in size involve only ordinary skill in the art, *In re Rose*, 220 F.2d 459, 463, 105 USPQ 237, 240 (CCPA 1955), and the Examiner takes Official Notice that it is well known in the art to create a larger opening to reactor vessel relative to the size of the reactor internals, to facilitate easy access to the reactor internals for maintenance and repair.

Regarding claim 9, as shown in FIG. 6, the conduit members 58 are positioned against the inner wall of the vessel 60 and slightly spaced from one another.

Regarding claim 10, Schulz discloses that the conduit members 1/58 are spaced apart from one another (see FIG. 6). Schulz, however, is silent as to the spacing 76 comprising a distance that is less than 2% of the distance between the outer ends 17 of the sidewall portion 16 of each of the conduit members 1/58. In any event, it would have been obvious for one of ordinary skill in the art at the time the invention was made to select an appropriate spacing between the conduit members 1/58 in the apparatus of Schulz, on the basis of suitability for the intended use thereof, because it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art, *In re Aller*, 105 USPQ 233.

Regarding claim 14, Schulz discloses sealing plates (i.e., expansion ring 74; FIG. 6).

Regarding claim 18, Schulz (FIG. 1-6; generally, column 5, line 10 to column 6, line 65) discloses an apparatus comprising:

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an interior wall (i.e., the inside wall of vessel 60; FIG. 5, 6); an axially mounted member (i.e., central conduit 70; FIG. 5, 6); a plurality of conduit members (i.e., scallops 10 in FIG. 1; labeled as scallops 58 in FIG. 5, 6) arranged to form an interrupted ring adjacent the interior wall; at least one of the plurality of conduit members 1/58 having a cross-sectional area defined by a pair of generally radially extending side wall portions (i.e., a pair of connection flaps 16; FIG. 1); an outer wall portion (i.e., axially extended back side 14; FIG. 1-3) proximate the interior wall of vessel 60; a permeable wall (i.e., axially extended front side 12) having a flow opening (i.e., perforations 20); and an annular particulate bed disposed between the conduit members 1/58 and the axially mounted member 70 (i.e., within the catalyst retaining space 52), having a substantially uniform radial thickness.

As shown in FIG. 2, the side wall portions 16 are angled away from each other in a generally, radially, outward direction. The figures further illustrate the sidewall portions 16 being angled away at what appears to be an included angle that is less than “truly radial” relative to the axis of the vessel 60 (i.e., the angle being determined by a radius of curvature R_3 ; see also FIG. 6). Accordingly, the apparatus of Schulz structurally meets the claim.

Schulz, however, does not explicitly state the value of the included angle. In any event, it would have been obvious for one of ordinary skill in the art at the time the invention was made to select an appropriate value for the included angle (such as the claimed value of an included angle being less than “truly radial”) in the apparatus of Schulz, on the basis of suitability for the intended use thereof, because it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art, *In re Aller*, 105 USPQ 233.

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3. Claims 5, 6, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schulz et al. (US 6,224,838) in view of McClain (US 4,198,002).

Regarding claims 5 and 16, Schulz discloses that the conduit members 1/58,

“... can have a variety of shapes. Conduits having rectangular, oblong, square or arcuate cross sections can be used for fluid distribution or collection.” (column 5, lines 22-25).

Therefore, it would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to select other appropriate shapes for the conduit members 1/58 in the apparatus of Schulz, on the basis of suitability for the intended use thereof. Furthermore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to select a shape comprising an inner wall portion that was equidistance from the outer wall portion or a shape having a generally trapezoidal shaped cross-section for the conduit members 1/58 in the apparatus of Schulz, on the basis of suitability for the intended use thereof, because the selection of such a shape for reactor internals is conventionally known in the art, as evidenced by McClain. As shown in FIG. 1 and 2, the conduit member (i.e., duct 10) of McClain is generally trapezoidal in shape, with an inner wall portion (i.e., flat segment 20) that is essentially equidistant from the outer wall portion (i.e., back plate 12) along its length.

Regarding claim 6, Schulz discloses that the screen members 13,15 are secured to each of the sidewall portions 16 using “any suitable means known in the art, preferably welding.” Also, the members 13,15 may be secured to either the inner or outer surfaces of the sidewalls 16. (see column 6, lines 44-56). Schulz, however, is silent as to the means of securing the screen member 13,15 comprising flange portions that extend from each of the sidewall portions 16 and an angle member fixed to the sidewall portions 16.

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McClain (FIG. 1-3) teaches a means of securing a screen member (i.e., front plate 14) to a sidewall portion (i.e., outer wall portion 162; FIG. 3) of a conduit member (i.e., duct 10), wherein the means comprises flange portions (i.e., hook portions 158) that extends from each of the sidewall portion and an angle member (i.e., the bend portion, not labeled, between portions 162 and 158) fixed to the side wall portions 162.

It would have been obvious for one of ordinary skill in the art at the time the invention was made to substitute the securing means of McClain for the securing means in the apparatus of Schulz, on the basis of suitability for the intended use thereof, because "any suitable means known in the art" may be used, as suggested by Schulz above, and furthermore, the substitution of known equivalent structures involves only ordinary skill in the art. *In re Fout* 213 USPQ 532 (CCPA 1982); *In re Susi* 169 USPQ 423 (CCPA 1971); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *In re Ruff* 118 USPQ 343 (CCPA 1958).

Regarding claim 17, Schulz discloses sealing plates (i.e., expansion ring 74; FIG. 6).

4. Claims 1-3, 5-10 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over McClain (US 4,198,002) in view of Stahl (US 4,971,771).

Regarding claims 1 and 18, McClain discloses a conduit member (i.e., duct 10) having an internal cross-sectional area defined by a pair of generally radially extending sidewall portions (i.e., wall portions 162, see FIG. 3) and an inner wall portion (i.e., front plate 14) integrally joined to each of the sidewall portions 162; the outer ends of the sidewall portions 162 (i.e., at the transition between portion 162 and back plate 112; FIG. 3) being placed adjacent to an inner wall of a reactor (see column 1, lines 17-26). At least a portion of the surface of inner wall portion 14 is formed by screen members having flow opening (i.e., a plate with perforations 26).

As best shown in FIG. 2, the sidewall portions (i.e., at seams 40 and 42) are angled away from each other in a generally, radially, outward direction. The figures further illustrate the sidewall portions being angled away at what appears to be an included angle that is less than “truly radial”, in the case of a cylindrical reactor. Because the included angle is less than “truly radial”, the included angle is, inherently, sufficiently small to permit said conduit members to be moved inwardly relative to adjacent members. McClain, however, does not explicitly state the value of the included angle. In any event, it would have been obvious for one of ordinary skill in the art at the time the invention was made to select an appropriate value for the included angle (such as the claimed value of an included angle being less than “truly radial”) in the apparatus of McClain, on the basis of suitability for the intended use thereof, because it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art, *In re Aller*, 105 USPQ 233.

McClain does not elaborate on the specific structure of the vessel in which the conduit members 10 are to be employed, except that the members are to be arranged so that the fluid being brought into contact with the bed of particulates flows downward, close to the walls of the reactor vessel, through the perforations and inward into contact with the bed (see column 1, lines 10-25). In any event, it would have been obvious for one of ordinary skill in the art at the time the invention was made to supply the conduit members 10 to a vessel having the instantly claimed configuration, on the basis of suitability for the intended use, because the Examiner takes Official Notice that the claimed reactor configurations is well known in the art. Stahl is presented to illustrate conventionality in the art (i.e., Stahl teaches a reactor vessel 1 comprising a plurality of conduit members 5, an axially mounted member 4,7 and an annular particulate bed

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6 contained in the space between the conduit members 5 and axially mounted member 4,7).

Regarding claims 2 and 3, the end portions of the sidewall portions 162 are joined by an outer wall portion 112 (see FIG. 3), wherein the sidewall portions 162 and outer wall portions 112 are formed from a single sheet of metal (see column 2, line 54 to column 3, line 32).

Regarding claim 5, the inner wall portion (i.e., flat segment portion 120) is equidistant from the outer wall portion 112 along its length (see FIG. 3).

Regarding claim 6, the screen member (i.e., front plate 14) is secured to the sidewall portion (i.e., outer wall portion 162; FIG. 3) by means of flange portions (i.e., hook portions 158) that extend from each of the sidewall portions and an angle member (i.e., the bend portion, not labeled, between portions 162 and 158) fixed to the side wall portions 162.

Regarding claim 7, when configured according to Stahl (see FIG. 3), the outer ends of the sidewall portions of the conduit members would not be joined to each other.

Regarding claim 8, when configured according to Stahl (see FIG. 1, 3), the conduit members would have a cross-sectional area and shape smaller than a top opening 2 of vessel 1.

Regarding claims 9 and 10, when configured according to Stahl (see FIG. 3), the conduit members would be positioned against the inner wall of the vessel, slightly spaced from one another. The collective teaching of McClain and Stahl, however, is silent as to the spacing comprising a distance that is less than 2% of the distance between the outer ends of the sidewall portion of each of the conduit members. In any event, it would have been obvious for one of ordinary skill in the art at the time the invention was made to select an appropriate spacing between the conduit members in the modified apparatus of McClain, on the basis of suitability for the intended use thereof, because it has been held that where the general conditions of a claim

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are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art, *In re Aller*, 105 USPQ 233.

Allowable Subject Matter

5. Claims 11-13 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

6. Applicant's arguments with respect to the previous rejection of claim 1-18 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of the newly found prior art, cited above.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A. Leung whose telephone number is (571) 272-1449. The examiner can normally be reached on 9:30 am - 5:30 pm Monday through Friday.

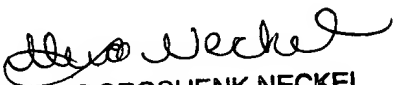
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jennifer A. Leung
April 18, 2006 


ALEXA DOROSHENK NECKEL
PRIMARY EXAMINER